

# PATENT ABSTRACTS OF JAPAN

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## (54) STRESS INFORMATION MANAGEMENT SYSTEM

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a stress information analysis system in which appropriate and consistent advice is given by referring to the data of past advice and stress information, reliability is improved by confirming whether or not it is an abnormal value in the case that some kind of the abnormal value appears in an analyzed result and stress information is analyzed and the advice is provided through a communication network.

**SOLUTION:** The system is provided with a first stress state analyzing means for analyzing the present stress state of a patient and a second stress state analyzing means for giving confirmation in the case that the analyzed result is different from a state recorded in a stress history information storage means by a prescribed value or more. In a stress analyzing means, a question order is randomly rearranged, also response time is limited and a question is given again for the one exceeding it. Also, the system can be operated through a web.

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## CLAIMS

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[Claim(s)]

[Claim 1] The stress information management system characterized by having the second stress phase analysis means for carrying out the check when the stress phase analysis results of a stress hysteresis information storage means to record the state of stress of a test subject's past, a first stress phase analysis means to analyze a test subject's present state of stress, and the first stress phase analysis means differ beyond a predetermined value to the condition of having been recorded on the stress hysteresis information storage means.

[Claim 2] Said first and the second stress phase analysis means are a stress information management system according to claim 1 characterized by reputting two or more questions in order at random, and performing a sequential question.

[Claim 3] Said first and the second stress phase analysis means are a stress information management system according to claim 2 characterized by having a reply time amount measurement means and having a question sequence modification means to stop reception of a reply and to change question sequence including a non-answered question when there is no reply into predetermined time.

[Claim 4] A stress hysteresis information storage means to record the state of stress of a test subject's past, A stress management hysteresis information storage means to record the cure against a stress improvement of a test subject's past, A stress improvement cure effectiveness expected-value storage means to record the effectiveness expected value of the cure against a stress improvement, A stress phase analysis means to analyze a test subject's current state of stress, and a stress management effectiveness calculation means to compute the effectiveness of stress management by comparing the analysis result of this stress phase analysis means with the analysis result of a stress hysteresis information storage means, The stress information management system characterized by judging whether the past cure against a stress improvement is continued from an evaluation result by having an evaluation means to perform the evaluation for the effectiveness of this stress

management as compared with this effectiveness expected value, or another cure is proposed.

[Claim 5] It has a test subject terminal, telephone, and the server connected to said test subject terminal through a communication network. A stress hysteresis information storage means to equip a test subject terminal with a first stress phase analysis means to analyze a test subject's present state of stress at least in the first half, and to record the state of stress of a test subject's past on said server, The stress information management system characterized by having a comparative-evaluation means to compare and evaluate the condition of having been recorded on the stress phase analysis result of said first stress phase analysis means and stress hysteresis information storage means which were transmitted from the test subject terminal.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the system which performs a stress check using a computer system, accumulates the result and performs exact advice.

[0002] Conventionally, evaluating the condition of stress through the reply to a series of questions, and giving suitable counseling about a stress managerial system, was made. Moreover, in JP,4-338460,A, individual difference is in the turgescence inside each living body to the same stimulus, in order to give the suitable counseling which considered this, there is a stress managerial system which evaluates a test subject's subjective state of stress by the character-analysis means and the objective stress phase analysis means, and it was suggesting "the suitable counseling for a test subject, for example, "listen to the music for lilac GUZESHON", carry out moderate movement", etc. by the evaluation result of these states of stress.

[0003]

[Problem(s) to be Solved by the Invention] Generally, with stress, it is defined as "the physiological and mental strain which takes place from outside in a living body to added stress \*\*\*\* (stressor)." A thing physical (for example, heat, cold, noise, etc.), chemical (for example, exhaust gas, smog, cigarette smoke, etc.) as stress \*\*\*\* (stressor), biological (for example, bacteria, mold, a virus, etc.), mental, and social etc. is mentioned. When a long duration pan is carried out to stress \*\*\*\* (stressor) of these excess, a living body may be completely exhausted, may become sick, and may become a "stress disease."

[0004] Moreover, the condition of stress \*\*\*\* (stressor) or stress is changing every

moment every day. moreover, by the conventional approach of advising for every one inspection Since the input mistake or outlying observation in the inspection cannot be checked, mistaken advice is not performed and improvement efforts of the last advice and a subsequent test subject and the effectiveness of an improvement are not considered There was a problem that the effectiveness which the last advice and contradictory advice will be performed, reliance of the test subject to advice will be lost in such a case, and a test subject weakens the intention of improvement efforts, consequently uses a stress information management system was reduced.

[0005] Moreover, in the conventional stress information management system, since off-line processing by the computer was performing stress information analysis, the test subject sent the reply of the test subject to the printed question to the stress information management system operating company by the approach of a letter etc., and had also obtained the analysis result from the stress information management system operating company by the letter to a test subject etc. Therefore, the time lag on several had arisen until the analysis result came to hand from the time of a reply.

[0006] Furthermore, it was only displaying the advice memorized beforehand, and since the effectiveness that each advice is expected did not understand the advice according to the analysis value in the conventional stress information management system, it was unclear for the test subject.

[0007] This invention is made in view of the above problems, and advice with the suitable coordination which considered historical data including the past advice and the data of stress information which were given to the test subject can be performed. Moreover, while offering the stress managerial system whose advice is possible also about the prediction effectiveness Dependability is raised by checking whether it is outlying observation when a certain outlying observation appears in an analysis result. Let the stress information analysis system which furthermore raised a test subject's convenience by supplying stress information analysis and offer of advice through a communication network be a supply plug.

[Means for Solving the Problem]

[0008] Therefore, the stress information analysis structure of a system concerning this invention A stress hysteresis information storage means to record the state of stress of a test subject's past, A first stress phase analysis means to analyze a test subject's current state of stress, When the stress phase analysis results of the first stress phase analysis means differ beyond a predetermined value to the condition of having been recorded on the stress hysteresis information storage means, it is characterized by having the second stress phase analysis means for carrying out the check.

[0009] Since the cause can check for the error of an input probably because stress changed a lot or when the stress phase analysis results of the first stress phase analysis means differ beyond a predetermined value to the state of stress of the past recorded on the stress hysteresis information storage means according to the above-

mentioned configuration, improvement in dependability can be aimed at in connection with improvement in the analysis precision of a stress information analysis system, and this.

[0010] Said first and the second stress phase analysis means are characterized by for the configuration of claim 2 reputting two or more questions in order at random further in addition to the above-mentioned configuration, and performing a sequential question.

[0011] According to the above-mentioned configuration, since a test subject receives a question in sequence which is different at every analysis, it can concentrate on the reply to each question, and he can get the reply reflecting a test subject's state of stress. In this stress information analysis system, in order to set time amount and to use a multiple-times book stress analysis system, if a question is set to the sequence same each time, a test subject will learn a reply pattern, the reply which does not reflect the condition of a test subject's stress will be issued, and it will be easy to lead to the mistaken analysis result. By making it the above-mentioned configuration, such a problem can be solved and an exact analysis result can be obtained.

[0012] the configuration of claim 3 -- the configuration of claim 2 -- in addition, further, said first and the second stress phase analysis means are characterized by having a question sequence modification means to stop reception of a reply and to change question sequence including a non-answered question, when it has a reply time amount measurement means and there is no reply into predetermined time.

[0013] since according to the above-mentioned configuration a non-answered question is rearranged and a question is redone when there is no reply from a test subject in a predetermined within a time one, a reply can be obtained without giving a test subject excessive consideration time amount, the reply reflecting a test subject's state of stress can be obtained, and analysis precision can be raised.

[0014] If consideration time amount long beyond the need is given to a test subject, by a test subject's changing a reply into consideration time amount, not acquiring information required for stress analysis, and making it the above-mentioned configuration, a test subject's state of stress can be acquired as a reply as it is, and analysis precision can be raised.

[0015] A stress hysteresis information storage means to record the state of stress of a test subject's past according to the configuration of claim 4, A stress management hysteresis information storage means to record the cure against a stress improvement of a test subject's past, A stress improvement cure effectiveness expected-value storage means to record the effectiveness expected value of the cure against a stress improvement, A stress phase analysis means to analyze a test subject's current state of stress, It has a stress management effectiveness calculation means to compute the effectiveness of stress management by comparing the analysis result of this stress phase analysis means with the analysis result of a stress hysteresis information storage means, and an evaluation means to perform the

evaluation for the effectiveness of this stress management as compared with this effectiveness expected value. It is characterized by judging whether the past cure against a stress improvement is continued from an evaluation result, or another cure is proposed.

[0016] According to the above-mentioned configuration, it can judge whether the cure is continued for a test subject, or it works on another cure by evaluating how much the effectiveness of the last cure was to expected value.

[0017] According to the configuration of claim 5, it has a test subject terminal, telephone, and the server connected to said test subject terminal through a communication network. A stress hysteresis information storage means to equip a test subject terminal with a first stress phase analysis means to analyze a test subject's present state of stress at least in the first half, and to record the state of stress of a test subject's past on said server, It is characterized by having a comparative-evaluation means to compare and evaluate the condition of having been recorded on the stress phase analysis result of said first stress phase analysis means and stress hysteresis information storage means which were transmitted from the test subject terminal.

[0018] According to the above-mentioned configuration, since a test subject can analyze the present state of stress on real time in the time amount of arbitration using a test subject terminal, convenience can realize a good stress analysis system for a test subject. Consequently, a test subject can do it, without being able to perform receiving stress analysis periodically easily, and choosing the time and a location.

[0019]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with the example of illustration. Drawing 1 is the outline explanatory view showing the configuration of the stress information analysis system 1 which provides a test subject with two or more questions, analyzes a state of stress based on a request of those (henceforth a "test subject") who wish stress phase analysis, and outputs advice of an analysis result and a cure.

[0020] As shown in drawing 1, the stress information analysis system 1 has the display 8 and printer 7 which display an input, a data-processing result, etc. as the various entry-of-data sections 9. The input section 9 is constituted by a keyboard and mouse 9 grade for a test subject to input data. In addition, it has the control device 2 which controls each part, and the storage means 3-6, and these are connected through the system bus 10.

[0021] The main program is memorized by the storage means 3. This main program is used in a control means 2, for example, displays the question for stress analysis on a display 8, rearranges the sequence of a question, analyzes the reply from a test subject, accumulates a reply and an analysis value, and gives the suitable advice for a test subject. In addition, about these actuation, each is mentioned later.

[0022] The file of a problem group is recorded on the storage means 4. Problem groups are the first problem group which consists of two or more fundamental questions, and a problem group for checking about the factor which had the change more than fixed from the last analysis result. It consists of a small factor-scores table which memorized the score value and multiplier value for analyzing the answer from a test subject to the second problem groups for checking the error by an input mistake, the variation of the reaction to a question, etc., and these questions, and an inside factor multiplier table. About these details, each is mentioned later.

[0023] Next, actual effectiveness is remembered to be the reply data of two or more test subjects' past, an analysis result, the information that performed advice, the cure which the test subject implemented, and its effectiveness forecast by the storage means 5 at time series.

[0024] Next, as for the cure data file 6, the average prediction effectiveness about each factor is recorded for every factor about various kinds of cures.

[0025] Drawing 2 is the equipment configuration explanatory view showing the equipment outline which the stress information analysis system 1 of this invention consists of.

[0026] As shown in this drawing, the configuration of the stress information analysis system 1 is connected through the system bus 101. It is the usual configuration equipped with the output units 17, such as the input devices 19, such as the specific communication device 112 and keyboard 108 which consist of leased-connection adapters to external storage, such as internal storage, such as CPU102, RAM103, and ROM104, a hard disk drive 105, and CD-ROM drive 106, the Internet, etc., and a mouse 109, a display 110, and a printer 111, and an exchange of required data and an instruction is performed among these through the above-mentioned system bus 101.

[0027] Drawing 3 shows the whole flow chart which shows the flow of processing of the whole stress information management system 1 of this invention.

[0028] Starting of the stress information management system 1 of the test subject who wishes stress analysis performs the first stress analysis means step S1 first. Here, two or more questions are taken out, a reply of the test subject to it is analyzed, and about each of two or more factors fewer than the number of questions, a test subject's state of stress is mark-ized, and is evaluated. About the detail of this processing, it mentions later.

[0029] Next, Counter n is set to zero at step S2. It is the preparation which checks the input by the second stress analysis means. Counter n is incremented at step S3. In step S4, the difference of these small factor scores  $A_n$  of the n-th small factor in the first stress analysis means and the last small factor scores  $P_n$  is computed. At step S5, it branches to step S7 which the absolute value of the difference of these small factor scores  $A_n$  and the last small factor scores  $P_n$  judges whether it is more than set point K1, and will judge it as those of an input mistake with possibility, and will carry out the second stress analysis means S7 if it is more than set point K1, and

if it is less than [ set point K1 ], it will branch to step S6. About the detail of the second stress analysis means S7, it mentions later.

[0030] Two or more different questions from the first stress analysis means S1 corresponding to the  $n$ -th factor of the first stress analysis means S1 are set, a reply of the test subject to it is analyzed, a test subject's state of stress is mark-ized, and step S7 estimates it.

[0031] At step S6, as a result of judging the  $n$ -th small factor scores of the first stress analysis means S1 to be the right at step S5, the small factor scores  $A_n$  of the first stress analysis means S1 are substituted for the last smallness factor scores  $S_n$ , and processing is advanced to S11. The last smallness factor scores  $S_n$  are settled small factor scores, and use this value with stress management evaluation / advice means S13.

[0032] At step S8, it judges whether the absolute value of the difference of the small factor scores  $A_n$  of the  $n$ -th small factor of the first stress analysis means S1 and the small factor scores  $B_n$  of the  $n$ -th small factor of the second stress analysis means S7 is more than set point K2, when this is more than K2, it branches to step S10, and it branches to step S9 at the time below K2. At step S10, since there is a two set point K [ more than ] absolute value of the difference of the score  $A_n$  of the  $n$ -th small factor of the first stress analysis means S1 and the score  $B_n$  of the  $n$ -th small factor of the second stress analysis means S7, it considers that the either is an incorrect input, and the score of the way near the last score  $P_n$  among  $A_n$  and  $B_n$  is adopted. Then, processing is advanced to step S10B.

[0033] Inside factor scores are calculated in step S10B. These contents of count are later mentioned in explanation of drawing 5.

[0034] In step S9, since the absolute value of the difference of the score  $A_n$  of the  $n$ -th small factor of the first stress analysis means S1 and the score  $B_n$  of the  $n$ -th small factor of the second stress analysis means S7 is less than [ set point K2 ], the score  $A_n$  of the  $n$ -th small factor of the first stress analysis means S1 regards it as the right, and adopts  $A_n$ . Then, processing is advanced to step 11.

[0035] It judges whether the last smallness factor scores  $S_n$  are more than set point K4 to the degree of step 11 as a connector, and when this is more than K4, it branches to step S13, stress management evaluation / advice means is performed, and it branches to step S14 at the time below K4 without performing stress management evaluation / advice means. The contents of the stress management evaluation / advice means S13 are later mentioned in explanation of drawing 7.

[0036] After the connector step S14 and at step S15, when it judges whether Counter  $n$  reached the small factor total  $NG_{max}$  and Counter  $n$  reaches the factor total  $NG_{max}$ , it progresses to the result output means S16, and when Counter  $n$  has not reached the factor total  $NG_{max}$ , it progresses to connector S2B, and a counter is incremented, and from step S3 to the step S15 is repeated about the following factor. The same is said of after that.



[0037] Drawing 4 is a flow chart explaining processing of the first stress analysis means S1. At step S21, all the question data used with the first stress analysis means S1 are inputted into RAM103 of a control means 2 from the problem group file 4. Next, the random number for several problem minutes inputted into RAM103 is generated, and it assigns and records to each problem.

[0038] At step S23, it rearranges in order of the magnitude of the random number which generated the question data used with the first stress analysis means S1 at step S22. It is because a problem may arise in the dependability of an analysis result when a test subject will memorize reply sequence, if a question is repeated in the same sequence, it rearranges, and since a test subject recognizes like the question which touches for the first time and answers by changing question sequence each time, the dependability of an analysis result can be raised.

[0039] The question counter nq is set to 1 at step S24. Next, step S25 is a connector and is the starting point of reckoning of processing of the question which sets a problem repeatedly. At step 26, a nq position question is outputted to a test subject. Although the output of this question is performed by usually displaying on a display 110, you may output with voice.

[0040] A timer counter nt is set to 0 at step S27. Step S28 is a connector and is the start point of the repeat of a timer routine. Step S29 is a timer and has the function to delay only predetermined time Td. the software timer which specifically executes the instruction of the fixed number of steps which processes nothing — or if a clock pulse is counted in hard and fixed numbers are reached, the hardware timer which sends an interrupt signal will perform.

[0041] After delaying only predetermined time Td, when it judges whether the value of a timer counter nt reached the predetermined value NTmax and NTmax is reached, it branches to step S32. In this case, since there is no reply into predetermined time, a current question generates the number part random number of a current question and the remaining question as re-asking a question like after. Next, the current question which carried out random number generation at step S32, and the remaining question are rearranged in order of the magnitude of a random number, new question sequence is determined, and it progresses to a connector S25.

[0042] When the value of a timer counter nt has not reached the predetermined value NTmax at step S31, it branches to step S34. At step S34, when it inspects whether keyboard grabbing occurred and keyboard grabbing is not detected, it branches to step S30, a timer counter nt is incremented, it advances to a connector S28, and the timer routine of step S29 – step S34 is repeated.

[0043] When keyboard grabbing is detected at step S34, it branches to step S35. At step S35, the reply Kin of a test subject is recorded on reply file [ of the storage area in RAM103 ] K (nq). The question counter nq is incremented at step S36. Next, at step 37, it judges whether it compared whether the value which added 1 to the total number NQmax of questions was reached in the question counter nq, and all

questions were completed. When all questions are not completed, processing of step S26 to the step S37 in which return to step S25, output the next question, and a reply is calculated is repeated, and the same is said of after that.

[0044] When all questions are completed at step S37 (i.e., when the question counter nq has reached the value which added 1 to the total number NQmax of questions), it branches to step S38. At step S38, it collects for every factor which rearranges and analyzes a question and a reply.

[0045] At the following step S39, the small factor counter ng used by the next analysis is set to 1. Step S40 is a connector and is the origin of an analytic repeat.

[0046] Step S41 calculates the sum total of a score of two or more questions which belong to the small factor concerned for every smallness factor. the case where the replies to a question are five steps of formats -- "always" -- "it is often" -- "sometimes" -- "occasionally" -- "there is nothing rash" -- \*\* -- although a test subject chooses and answers from a reply item which is said -- these each -- receiving -- base -- the base of two or more questions which can be assigning scores 1-5 and belong to the small factor concerned -- the sum total of a score is calculated.

[0047] Next, it asks for the score which corresponds with reference to a small factor-scores table for every small factor to the score for every small factor for which it asked at step S41 at step S42. About a small factor-scores table, it mentions later by explanation of drawing 8. The small factor counter ng is incremented at step S43. Next, when it judges whether calculation of small factor scores was completed about all small factors at step S44 and analysis of all small factors is not completed (i.e., when the question counter nq has not reached the value which added 1 to the total number NQmax of questions), processing of step 41 to the step 44 which computes the score about the following small factor by returning to step S40 is repeated, and the same is said of after that.

[0048] When it is judged that calculation of small factor scores was completed about all small factors at step S44 (i.e., when the question counter nq has reached the value which added 1 to the total number NQmax of questions), it progresses to step S45.

[0049] Inside factor scores are computed at step S45. An inside factor is what applied, added and obtained the weighting multiplier of each small factor to each smallness factor scores of the small factor to which plurality relates, in order that a test subject may make the state of stress easy to grasp, for example, it prepares the inside factor of one piece about 4-5 small factors, and shows the condition of stress by the score of inside [ some kinds of ] factor. While calling it a "mental reaction score", specifically, the inside factor scores of a factor apply, add and obtain the weighting multiplier of each small factor to small factor scores, such as "anxiety and depression", a "nervous inclination", "stress", and "insomnia." The detail of processing is explained in full detail by explanation of drawing 5. After ending step S45, processing of the first stress analysis means is ended and it returns to the main

program of drawing 3 .

[0050] Drawing 5 is the flow chart of step S10B of drawing 3 , and inside factor-scores count of step S45 of drawing 4 . The inside factor counter  $nh$  is set to 1 at step S91. Next, step S92 is a connector and is the origin of a repeat about an inside factor. Next, the small factor counter  $ni$  is set to 1 at step S93, and inside factor-scores  $T(nh)$  is set to zero.

[0051] Step S94 is a connector and is the origin of accumulation. At step S95, the value which multiplied small factor-scores  $S(ni)$  by the factor multiplier  $TIK(ni)$  while being the weighting multiplier of the small factor concerned is added to inside factor-scores  $T(nh)$ , and the small factor counter  $ni$  is incremented.

[0052] Next, at step S96, when it judges whether a small factor counter is equal to the number which added 1 to the small factor total  $NG_{max}$  and accumulation is completed about no small factors (i.e., when a small factor counter differs from the number which added 1 to the small factor total  $NG_{max}$ ), it branches to step S94 and accumulation of step S95 is repeated about the following small factor. When accumulation is completed about all small factors (i.e., when equal to the number with which the small factor counter added 1 to the small factor total  $NG_{max}$  at step S96), it progresses to step S97 and the inside factor counter  $nh$  is incremented.

[0053] Next, at step S98, when it judges whether an inside factor counter is equal to the number which added 1 to the inside factor total  $NH_{max}$  and score count is not completed about the inside factor of all (i.e., when an inside factor counter differs from the number which added 1 to the inside factor total  $NH_{max}$ ), it branches to step S92 and processing of step S93 – step S98 is repeated about the next inside factor. When it carries out and score count is completed about the inside factor of all (i.e., when equal to the number with which the inside factor counter added 1 to the inside factor total  $NH_{max}$  at step S98), since the score count about the inside factor of all was completed, processing of the first stress analysis means S1 is ended.

[0054] Drawing 6 is the flow chart of the second stress analysis means S7. At step S51, two or more second question data about the  $n$ -th small factor are inputted into RAM103 from the problem group file 4. Next, the random number for several problem minutes inputted into RAM103 is generated, and it assigns and records to each problem.

[0055] At step S53, it rearranges in order of the magnitude of the random number which generated the question data used with the second stress analysis means S7 at step S52. It is because a problem may arise in the dependability of an analysis result by memorizing the answer out of which a result with a sufficient test subject comes if a question is repeated in the same sequence, it rearranges, and since a test subject recognizes like the problem which touches for the first time and answers by changing question sequence each time, the dependability of an analysis result can be raised.

[0056] The question counter  $N$  is set to 1 at step S54. Next, step S55 is a connector and is the starting point of reckoning of processing of the question which sets a

problem repeatedly. At step S6, the Nth question is outputted to a test subject. Although the output of this question is performed by usually displaying on a display 110, you may output with voice.

[0057] At step S57, a timer counter  $N_t$  is set to 0 and it progresses to step S58. Step S58 is a connector and is the start point of the repeat of a timer routine. The following step S59 is a timer and has yesterday when only predetermined time  $T_d$  is delayed. the software EWEA timer which specifically executes the instruction of the fixed number of steps which processes nothing -- or if a clock pulse is counted in hard and fixed numbers are reached, the hardware timer which sends an interrupt signal will perform.

[0058] After delaying only predetermined time  $T_d$ , step S61 branches to step S62, when it judges whether the value of a timer counter  $n_t$  reached the predetermined value  $N_{max}$  and  $N_{max}$  is reached. In this case, since there is no reply into predetermined time, a current question generates the number part random number of a current question and the remaining question as re-asking a question like after. Next, the current question which carried out random number generation at step S62, and the remaining question are rearranged in order of the magnitude of a random number at step S63, new question sequence is determined, and it progresses to a connector S55.

[0059] When the value of a timer counter  $N_t$  has not reached the predetermined value  $N_{max}$  at step S61, it branches to step S64. At step S64, when it inspects whether keyboard grabbing occurred and keyboard grabbing is not detected, it branches to step S60, a timer counter  $N_t$  is incremented, it advances to a connector S58, and the timer of step S59 is repeated.

[0060] When keyboard grabbing is detected at step S64, it branches to step S65. At step S65, the reply KIN of a test subject is recorded on the reply file K2 of the storage area in RAM103 (N). The question counter N is incremented at step S66. Next, at step S67, it judges whether it compared whether the value which added 1 to the total number  $N_{lmax}$  of questions was reached in the question counter N, and all questions were completed. When all questions are not completed, processing of step S56 to the step S67 in which return to step S55, output the next question, and a reply is calculated is repeated, and the same is said of after that.

[0061] When all questions are completed at step 67 (i.e., when the question counter N has reached the value which added 1 to the total number  $N_{lmax}$  of questions), it branches to step S68. the base about two or more questions [ step / S68 ] -- a score is totaled and calculated. It asks for the score which corresponds with reference to a table for every factor to the score for every factor for which it asked at step S68 at step S69. the inside of the problem group file 4 -- every smallness factor -- base -- the small factor-scores table which recorded the small factor scores corresponding to it to the score sum total -- it is -- this -- referring to -- base -- the small factor scores corresponding to a score are read, and it asks for

small factor scores. The small factor-scores table is illustrated by drawing 8 (c).

[0062] Drawing 7 is the flow chart of stress management evaluation / advice means S13. At step S71, the historical data of a test subject's past are inputted into RAM103 from reply analysis / time-series-analysis file 5. At step S72, when it inspects whether last time has advice and last time has advice, it progresses to step S73. At step S73, when comparing this score  $S_n$  with the last score  $S_{np}$ , judging whether the stress value is decreasing this time and decreasing this time, it progresses to step S74.

[0063] At step S74, the value  $S_k$  which subtracted this score  $S_n$  from the last score  $S_{np}$  is added to the effectiveness accumulation value to which the cure statistics file of drawing 10 (b) corresponds, the number of counts is incremented, and it progresses to step S78. Here, the cure statistics file is constituted so that an effectiveness station value and the number of counts can be recorded for every range of the score of the last score  $S_{np}$ .

[0064] Next, at step S78, when the value  $S_k$  and threshold  $S_s$  which subtracted this score  $S_n$  from the last score  $S_{np}$  are compared and  $S_k$  exceeds  $S_s$ , it judges that it was effective, the same advice as last time is chosen at step S80, and it displays at step S82, "Please continue a cure as it is", and progresses to the connector step S86, and it returns to a main program.

[0065] When  $S_k$  is more than  $S_s$  at step 78, it judges that effectiveness is inadequate, the advice last at step S79 can be included, and the multiple selection of the suitable advice is made, and it progresses to the connector step S81.

[0066] Moreover, at step S72, when there is no advice last time, it is not necessary to take the past advice into consideration, and it branches to step S76, the multiple selection of the suitable advice is made out of all advice, and it progresses to the connector step S81.

[0067] Moreover, at step S73, since it is judged that there is no effectiveness of the last advice when the stress value is increasing this time, except for advice, the multiple selection of the suitable advice is made last time, and it progresses to the connector step S81.

[0068] After choosing two or more advice at step S75, step S76, and step S79, the cure to perform is chosen and inputted out of two or more advice to which it progressed to the connector step S81, two or more advice chosen at step S83 after that was outputted, and the test subject was outputted at step S84.

[0069] Then, the cure of OO was chosen this time [ " ]. When this cure is performed by OO every day, the anticipation effectiveness of one month after is OO point. It outputs as " , progresses to the connector step S86, and returns to a main program.

[0070] Drawing 8 illustrates the data stored in the storage means 4 problem group file of this stress information management system. The storage means 4 problem group file consists of four kinds of files, the (a) first problem group, the (b) second problem group, (c) small factor-scores table, and the factor multiplier table in (d).

[0071] It is what recorded the question which performs the first problem group file (a) to the beginning of stress analysis, and it consists of a question number, a small factor number, an inside factor number, and four sorts of data of a question, and two or more these are put in order. These problem groups analyze by setting the all with the first stress analysis means S1 of drawing 3. 3-5 questions are usually used for analysis of one small factor, and two or more small factors are used for analysis of the inside factor of one piece. The second problem group (b) consists of a question number, a small factor number, an inside factor number, and four sorts of data of a question similarly, and two or more these are put in order. The question group corresponding to some of the small factors in the second problem group (b) is used with the second stress analysis means S7.

[0072] the base of a reply to two or more questions to which a small factor-scores table (c) belongs to the same small factor -- the small factor scores  $PSImn$  of the  $m$ -th small factor corresponding to the value  $SIn$  which totaled the score are recorded. this -- the class of factor -- the base -- since how depending on which the stress to Score  $SIn$  appears differs -- the class of small factor -- each base -- a different value to Score  $SIn$  is taken.

[0073] the reply to a question group usually consists of formats from two steps of the Jes Nor format to about five steps -- having -- \*\*\*\* -- the case of five steps of formats -- " -- always -- " -- " -- it is often -- " -- " -- sometimes -- " -- " -- occasionally -- " -- " -- there is nothing rash -- " -- \*\* -- although a test subject chooses and answers from a reply item which is said -- these each -- receiving -- base -- scores 1-5 are assigned.

[0074] the base of the question corresponding to a small factor with the same small factor scores  $PSImn$  -- properties, such as a small factor which stress will go up suddenly if a certain threshold is exceeded to the value which totaled the score, and a small factor which stress goes up gradually, are considered, and it is displayed by full marks that it is intelligible for a test subject. Usually, when stress is high, a score displays that it is high, but when stress is conversely high, a score may display that it is low.

[0075] The weighting multiplier data  $TIKim$  to each of the small factor  $TIIm$  for an inside factor multiplier table (d) to calculate the inside factor scores of an  $i$ -th inside factor are recorded. In drawing 7 (d), the inside factor multiplier  $TIKim$  calculates the score of the  $m$ -th small factor which carries out the multiplication of this to the  $m$ -th corresponding small factor scores  $PSImn$ , and is used for inside factor-scores count. Inside factor scores are computed by performing weighting about other small factor scores similarly, and totaling these. It is displayed by full marks that inside factor scores are also intelligible for a test subject.

[0076] Drawing 9 illustrates the data stored in storage means 5 reply analysis / time-series-analysis file of this stress information management system. Each smallness factor scores, inside factor scores, the adopted advice, its effectiveness forecast, and

the value of actual effectiveness are recorded on this file in order of the date.

[0077] Drawing 10 illustrates the data recorded on the storage means 6 cure data file of this stress information management system. The cure data file 6 consists of a cure file (a) and a cure statistics file (b).

[0078] to each smallness factor scores PSImn, a cure file (a) is looked to that extent like [ the class of each set policy ], responds, and the prediction improvement effect value after a fixed period is recorded. Although this prediction improvement effect value records the predicted value, it is corrected according to are recording of a subsequent test subject's data, and raises dependability at the beginning.

[0079] A cure statistics file (b) is used in order to store a test subject's actual effectiveness data and to acquire the more accurate cure effectiveness to the above-mentioned cure file (a). Here, it is constituted by each set policy so that the number of counts and an effectiveness accumulation value may be recorded. And a cure file (a) is updated for the value which \*(ed) the effectiveness accumulation value of this cure statistics file (b) by the number of counts periodically as prediction effectiveness of a cure file. It is step S74 of drawing 7 , and the value Sk which subtracted this score Sn from the last score Snp is added to the effectiveness accumulation value to which the cure statistics file of drawing 10 (b) corresponds, and, specifically, it carries out by incrementing the number of counts.

[0080] After being able to perform are recording of the data of the drawing 10 (b) cure statistics file, the drawing 10 (a) cure file is updated and used by making into a prediction improvement effect value the value which \*(ed) the effectiveness accumulation value on a cure statistics file by the number of counts periodically. Thus, a test subject can be provided with a more exact prediction improvement effect value by updating the prediction improvement effect value of a cure file (a).

[0081] Although it is easy to grasp the condition of stress and the factor is constituted from two kinds, a small factor and an inside factor, at this example, this can also be constituted from three kinds or two or more kinds beyond it of factors of a small factor, an inside factor, and a large factor, and calculation of the factor scores of the high order more than an inside factor can be computed in that case by the same approach as calculation of the inside factor scores of this invention.

[0082] Moreover, since a stress information management system can be performed using the Internet or an electronic mail, and it can perform analysis and advice in this case, without placing time amount, a test subject can also take an early action and is effective.

[0083] In drawing 11 , the test subject Tn has a web and the e-mail terminal units 201, such as a personal computer, respectively, and can connect these terminal units now to the web server 100 and mail server 130 which constitute some of these stress information management systems 1 through the Internet 300.

[0084] This stress information management system 1 consists of others, database servers 120, application servers 110, and mail servers 130. [ web server / this ]

[0085] In this example, drawing 12 is the flow chart showing the flow of a series of processings until it connects a result while recording about the advice which a test subject Tn accesses this stress information management system 1 on a web, analyzes a state of stress, and a test subject chooses from this inside in response to two or more advice.

[0086] In this example, three kinds of processings are performed greatly. There are issuance processings, such as reception, registration, ID, etc. of step S101 to the step S107 of drawing 12, in the first place, and the test subject Tn who uses for the first time comes to be able to do use of this stress information management system 1 by performing this processing.

[0087] It is the processing which transmits [ second ] the first stress analysis means program, the second stress analysis means program, the first problem group data, and the second problem group data to the test subject of step S108 to the step S112 of drawing 12. This takes most time amount to the first stress analysis means with the activity of replying to the question usually exceeding 100 questions. Moreover, also in the second stress analysis means, when there are many corresponding factors, most time amount is required. In order to solve this problem, this stress information management system 1 and the load of a web server 100 are mitigable by transmitting beforehand the first stress analysis means program, the second stress analysis means program, the first problem group data, and the second problem group data to a test subject's computer, operating the first stress analysis means program on a test subject's computer, and analyzing it.

[0088] It is stress analysis and advice processing of the 3rd drawing 12 of step S113 to the step S125. Suitable advice is performed, after analyzing this in response to transmission of a reply of the first stress analysis means from a test subject, performing the second stress analysis means on a test subject's computer and analyzing these, when required.

[0089] By drawing 11, guidance of a stress information management system is first released on the web server 100 of the stress information analysis system 1 at step S101. The test subject Tn who uses for the first time accesses this stress information management system 1 at step S102, and peruses them. Based on it, a test subject Tn opts for the stress analysis by this stress information management system 1, and performs user registration for it to this stress information management system 1 at step S103. That is, a test subject Tn indicates a required matter (input of User Information), and proposes to registration.

[0090] Next, step S104 performs the examination based on [ at step S105 / based on reception at this stress information management system 1 side ] above-mentioned User Information for the registration application. If this examination passes, user registration will be made at step S106, and user ID and a password will be issued to a test subject Tn.

[0091] Next, the entry screen which he will not illustrate first at step S108 if the test



subject Tn who received issuance of user ID and a password accesses this stress information management system 1 is displayed. then -- if a test subject Tn enters previous user ID and a previous password at step S109 -- step S110 -- him -- a check is made.

[0092] Next, the first stress analysis means program, the second stress analysis means program, the first problem group data, and the second problem group data are transmitted to a test subject Tn from this stress information management system 1. The first stress analysis means program processes the parts of step S21 -- step S37 among the programs of said drawing 4, the first problem group data are the first problem group data of said drawing 8 (a), the second stress analysis means program processes the part of steps S51-S67 of drawing 6, and the second problem group data are the second problem group data of said drawing 8 (b).

[0093] At step S113, a test subject Tn gets the reply data to the first problem group among the flow charts of drawing 4 according to step S21 -- step S37 using the first stress analysis means program and the first problem group data which were transmitted from this stress information management system 1 on a test subject's computer 201.

[0094] Next, if this stress information management system 1 is accessed, an entry screen as shown in drawing 12 at step S114 will be displayed. then -- if user ID and a password are entered at step S115 -- step S116 -- him -- a check should do -- this stress information management system 1 performs a reply Request to Send to a test subject at step S117.

[0095] In response to the reply Request to Send from this stress information management system 1, a test subject Tn transmits the reply of the first stress analysis means to this stress information management system 1. The stress information management system 1 which received the reply of the first stress analysis means processes steps S38-S44 of drawing 4, computes small factor scores about each smallness factor, and compares them with the last small factor scores about each smallness factor. Since there are no last small factor scores in the first analysis, it changes to the last small factor scores, and compares with an average score.

[0096] Next, the small factor number and the second stress analysis means startup instruction with which the stress value rose more than constant value from the score last at step S120 are transmitted to a test subject's computer. The computer of the test subject who received this small factor number and the second stress analysis means startup instruction performs two or more questions which start the second stress analysis means and are related with the small factor concerned, and obtains a reply of a test subject. After all replies are completed, a reply is transmitted to this stress information management system 1 from a test subject's computer at step S121.

[0097] Next, after computing a score by analyzing a reply with the second stress analysis means transmitted to this stress information management system 1 from a

test subject's computer at step S122, when the absolute value of the difference of the first stress analysis means score and the second stress analysis means score is beyond a predetermined value, the score of the direction near the last score adopts as the score of the factor concerned, and the case of under a predetermined value adopts a first stress analysis means score. This processing is equivalent to step S68 of drawing 6 – step S69, and steps S8–S11 of drawing 3.

[0098] Next, advice effective about the factor to which the score adopted at step S122 is over the predetermined value is searched with step S123, and – frequency and the anticipation effectiveness are shown to a test subject to that extent with two or more advice.

[0099] Next, at step S124, the advice which chose and chose the advice which a test subject is going to perform from two or more advice shown at step S123 is transmitted to this stress information management system 1.

[0100] Next, at step S125, the advice which the test subject chose as this stress information management system 1 is recorded, and a result is connected to a test subject. As mentioned above, processing of step S123 – step S125 is equivalent to drawing 7 stress management evaluation / advice means.

[0101] In addition, although the first stress analysis means and the second stress analysis means performed the question for stress analysis of a test subject in the test subject terminal, the reply to it was obtained and the reply is transmitted to the stress information analysis system 1 in this example, a reply is analyzed about each smallness factor at a test subject terminal, it takes out till the score of each smallness factor, and you may make it transmit the score of each smallness factor to the stress information analysis system 1.

[0102] Since the amount of information which minds the Internet by making it the above configurations can be decreased, the effectiveness of a system can be gathered. Moreover, since the question for stress analysis and a reply are recorded by the program installed in the test subject terminal, this processing is performed at a high speed, things are made, and processing can be advanced to real time for a test subject.

[0103] Moreover, you may constitute so that each question may be transmitted to a test subject terminal from the stress information analysis system 1 at each other than the above-mentioned configuration and a reply may be transmitted from a test subject terminal each time. Thus, when constituted, it is not necessary to install the first stress analysis means and the second stress analysis means in a test subject terminal, and stress analysis can be performed simple.

[0104]

[Effect of the Invention] As mentioned above, as explained, according to the stress information management system of claims 1–5 of this invention Since the cause can check for the error of an input probably because stress changed a lot or when the stress phase analysis results of the first stress phase analysis means differ beyond a

predetermined value to the state of stress of the past recorded on the stress hysteresis information storage means Improvement in dependability can be aimed at in connection with improvement in the analysis precision of a stress information analysis system, and this.

[0105] Moreover, since a test subject receives a question in sequence which is different at every analysis, it can concentrate on the reply to each question, and he can get the reply reflecting a test subject's state of stress. In this stress information analysis system, in order to set time amount and to use a multiple-times book stress analysis system, if a question is set to the sequence same each time, a test subject will learn a reply pattern, the reply which does not reflect the condition of a test subject's stress will be issued, and it will be easy to lead to the mistaken analysis result. By making it the above-mentioned configuration, such a problem can be solved and an exact analysis result can be obtained.

[0106] moreover, since a non-answered question is rearranged and a question is redone when there is no reply from a test subject in a predetermined within a time one, a reply can be obtained without giving a test subject excessive consideration time amount, the reply reflecting a test subject's state of stress can be obtained, and analysis precision can be raised.

[0107] Moreover, a stress hysteresis information storage means to record the state of stress of a test subject's past, A stress management hysteresis information storage means to record the cure against a stress improvement of a test subject's past, A stress improvement cure effectiveness expected-value storage means to record the effectiveness expected value of the cure against a stress improvement, A stress phase analysis means to analyze a test subject's current state of stress, The analysis result of this stress phase analysis means is compared with the analysis result of a stress hysteresis information storage means. In order to judge whether it has a stress management effectiveness calculation means to compute the effectiveness of stress management, and an evaluation means to perform the evaluation for the effectiveness of this stress management as compared with this effectiveness expected value, and the past cure against a stress improvement is continued from an evaluation result, or another cure is proposed, It can judge whether the cure is continued for a test subject, or it works on another cure by evaluating how much the effectiveness of the last cure was to expected value.

[0108] Furthermore, since a test subject can analyze the present state of stress on real time in the time amount of arbitration using a test subject terminal, convenience can realize a good stress analysis system for a test subject. Consequently, a test subject can do it, without being able to perform receiving stress analysis periodically easily, and choosing the time and a location.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the configuration explanatory view showing the configuration of the stress information analysis system 1 of this invention.

[Drawing 2] It is the equipment configuration explanatory view showing the equipment outline of the stress information analysis system 1 of this invention.

[Drawing 3] It is the whole stress information analysis system 1 flow chart of this invention.

[Drawing 4] It is the flow chart of the first stress analysis means among the stress information analysis systems 1 of this invention.

[Drawing 5] It is the flow chart of the second stress analysis means among the stress information analysis systems 1 of this invention.

[Drawing 6] It is the flow chart of stress management evaluation / advice means among the stress information analysis systems 1 of this invention.

[Drawing 7] It is the file block diagram showing the data stored in the problem group file 4 used by the stress information analysis system of this invention.

[Drawing 8] It is the file block diagram showing the data stored in reply analysis / time-series-analysis file 5 used by the stress information analysis system of this invention.

[Drawing 9] It is the file block diagram showing the data stored in the cure data file 6 used by the stress information analysis system of this invention.

[Drawing 10] It is the outline explanatory view showing the configuration of the stress information analysis system 1 of claim 5.

[Drawing 11] It is the flow explanatory view showing the flow of a series of processings of the stress information analysis system 1 of claim 5.

### [Description of Notations]

- 1 Stress Information Analysis System
- 2 Control Means
- 3 Main Program File
- 4 Problem Group File
- 5 Reply Analysis / Time-Series-Analysis File
- 6 Cure Data File
- 7 Printer
- 8 Display
- 9 Input Section
- 10 System Bus
- S1 The first stress analysis means
- S7 The second stress analysis means
- S13 Stress management evaluation / advice means

201 Test Subject Terminal Unit

300 Internet

100 Web Server

110 Application Server

120 Database Server

130 Mail Server

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